

## Chapter 14

# Weapons of Mass Destruction and Smoke Operations

Weapons of mass destruction (WMD) are among the most hazardous on the battlefield. US forces must survive, fight, and win if an enemy uses these weapons. Many nations have the capability to employ WMD. Threat forces may attack rear areas using WMD as well as conventional munitions in a coordinated effort to achieve specific objectives. Delivery systems include artillery, missiles, and manned and unmanned aircraft that use sophisticated target-acquisition and guidance systems. This chapter describes the effects of WMD destruction, the fundamentals of NBC defense, and the fundamentals of smoke operations.

## WEAPONS OF MASS DESTRUCTION

The use of WMD can result in mass casualties, contamination of land, and extensive destruction. Force protection is an imperative in this environment. Commanders must never assume that they are immune to attack but consider ways of decreasing their risk. Units can survive the effects of WMD by anticipating their employment. Only cohesive, disciplined, physically fit, and well-trained units can function in this environment. Nevertheless, as a result of wearing protective equipment, long-term operations will degrade even the best individual and unit performance. Commanders can protect their forces in a variety of ways, including training, OPSEC, dispersion of forces, and proper use of terrain for shielding against effects. Being better prepared than the enemy for continuous operations under WMD-produced conditions will deter the enemy from using these weapons.

The employment of NBC weapons will greatly alter the tempo of combat. In an NBC environment, logistical battle command becomes more difficult and must concentrate on maintaining effective support. Employment of WMD can be especially effective in disrupting logistical support operations, and relatively few munitions are needed. SPODs, APODs, pre-positioned equipment storage sites, marshaling areas, and key logistical routes are

likely targets. Logistical support facilities located in the COMMZ are prime targets. Control will be difficult even within the smallest unit. Personnel in protective clothing will be slow to respond to rapid changes in mission.

Decontamination of areas and equipment that have been contaminated is a major concern. Multinational operations become riskier with the threat of NBC use. Countries that cannot protect themselves against this threat may find themselves the primary targets of an enemy whose aim is to disintegrate the coalition. The likelihood that an enemy will use WMD against members of a coalition increases the need for US forces to demonstrate the ability to defend effectively against their effects. Commanders should consider that possibility in all strategic, operational, and tactical planning.

## NUCLEAR WEAPONS

As a force that now has no organic nuclear capability, the Army must rely on Air Force and Navy nuclear capabilities to deter regional threats and, should it become necessary, to respond to regional use of these weapons. The integration of nuclear weapons and long-range ballistic missile systems expands the scope of regional conflict. Ballistic missiles significantly

reduce reaction times and create complex planning and decision criteria. The ability of some nations to employ nuclear weapons at extended ranges—using ballistic or cruise missiles and high-speed aircraft—will significantly enhance their effectiveness as instruments of terror. With this ability comes the possibility of escalating a conflict beyond regional boundaries.

Using intelligence systems, planners advise the commander of the enemy's capability to employ nuclear weapons and under what conditions he is most likely to do so. A significant intelligence task is locating these weapons and assessing the probability of their employment. Accordingly, the integration of national, joint, and multinational intelligence means is vital to this effort.

The immediate effects of a nuclear detonation are blast, thermal radiation, initial nuclear radiation, and electromagnetic pulse (EMP), which can cause significant personnel and materiel losses. Secondary effects include urban devastation, fires, and radiological contamination. The EMP from a nuclear detonation can affect unshielded electronic equipment and degrade C<sup>3</sup>I systems. Residual radiation also can have long-term effects on personnel, equipment, facilities, terrain, and water sources. Therefore, ensuring that friendly force dispositions do not provide lucrative targets for nuclear weapons is important.

## NBC OPERATIONS

NBC operations are essential to successfully executing the theater army mission. Support facilities, troop concentrations, and supplies in the COMMZ are extremely vulnerable to NBC attack. Threat forces may attack, using a combination of weapon systems. Aggressive precautions against the attack are necessary to increase survivability. An adequate defense is based on all units and personnel employing common defensive measures with support from specialized chemical units. Chemical units at all levels require extensive logistical support. Smoke and decontamination operations are resource-intensive; they require logistical

## BIOLOGICAL WEAPONS

While the US has renounced the use of biological weapons, many other nations have not. The availability of biological weapons to possible enemies requires that commanders prepare for operations in a biologically contaminated environment. Defensive measures are necessary to mitigate the effects of a biological attack. Both military and civilian populations require information as well as psychological and medical preparation.

## CHEMICAL WEAPONS

All current and future operations have the potential to occur in a chemically contaminated environment. Although US policy does not condone or authorize use of chemical weapons, US forces' preparedness to operate in this environment negates many possible advantages of employing them—itself a deterrent to their use.

Chemical weapons produce immediate and delayed effects that can hamper operations through the contamination of equipment, supplies, and critical terrain features. Commanders can reduce the effects of chemical employment by applying the fundamentals of contamination avoidance, protection, and decontamination. Chemical reconnaissance and decontamination are two planning imperatives for all future missions; training is the key. Detailed information on providing NBC protection to the force, as well as risk analysis and assessment, is in FM 3-4.

planning and execution to ensure success. Detailed information on NBC defense is provided in related field manuals.

## PLANNING

When planning the employment of chemical assets, the commander must balance the requirements against limited resources. The challenge is to accomplish the mission within resource constraints. Logistical considerations have as much impact on COAs as the enemy does.

Chemical operations must be anticipated as far in advance and as accurately as possible to accumulate assets needed to accommodate

any likely operation. These operations consume high rates of fuel, fog oil, econtaminants, and water and require a commitment of maintenance, transportation, food, and medical services.

### NBC DEFENSE

Ports, airfields, supply depots, railheads, maintenance facilities, and major command headquarters are prime targets for NBC attacks. Forces operating in the rear area could contaminate critical command headquarters or supply facilities and significantly affect the responsiveness of support organizations.

Units in the COMMZ actively participate in the planning and execution of NBC defense operations. Only through a coordinated effort in which all units—not solely specialized chemical units—perform defensive measures can the ASCC's critical functions continue to be performed effectively. The performance of allocated defensive tasks counters the effects, including cumulative effects, of employing NBC weapons. However, they make normal operations more difficult and reduce overall efficiency; therefore the affected commander must consider mission degradation and hazards when employing defensive measures. Defensive tasks include contamination avoidance, protection, and decontamination.

### Contamination Avoidance

The first NBC defensive fundamental is contamination avoidance, which is necessary to prevent degradation of the unit's performance. Avoiding contamination allows units to maintain tactical momentum and preserves combat power by keeping soldiers out of increased NBC protective postures. It also removes or lessens the need for decontamination. This task is accomplished through passive defensive measures: NBC reconnaissance, detection and identification, warning of NBC hazards, and limiting exposure to and the spread of contamination.

**NBC Reconnaissance.** The appropriate chemical headquarters, in coordination with the supported area headquarters, plans NBC reconnaissance activities. Dedicated NBC reconnaissance units conduct large-area reconnaissance throughout the COMMZ. The

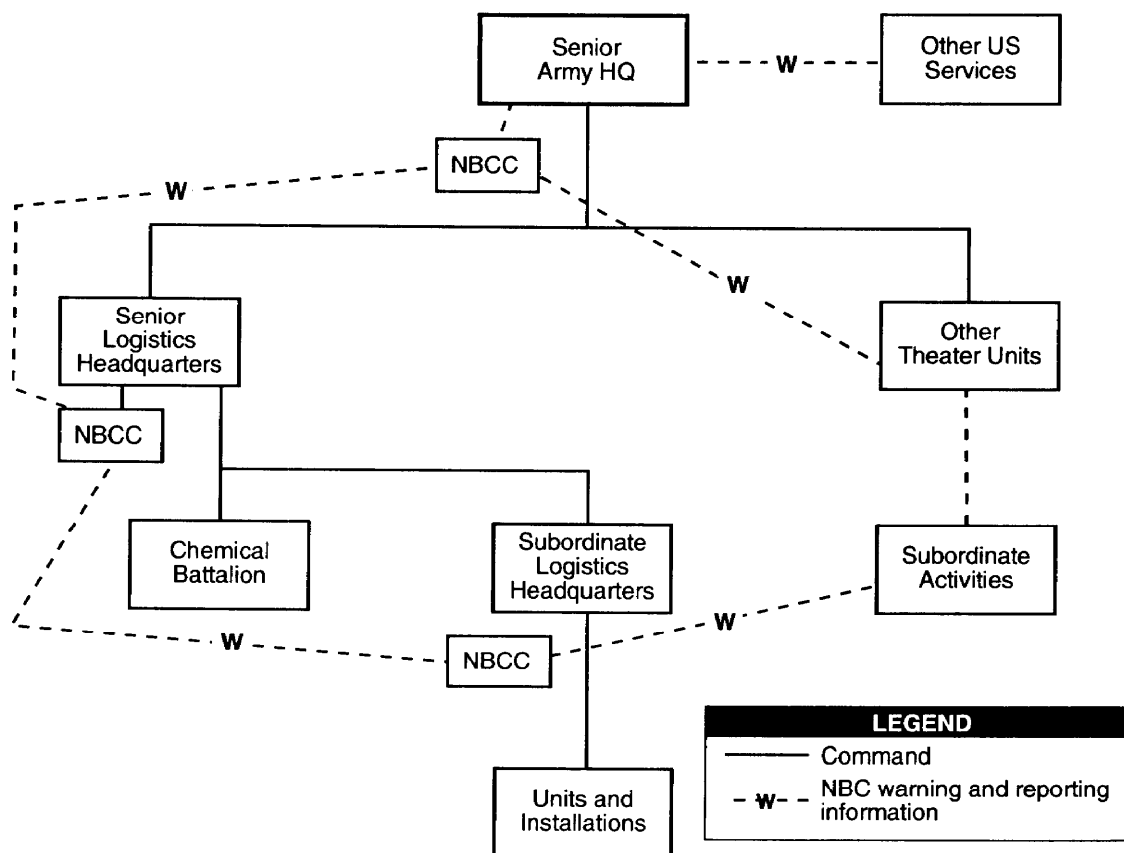
objective is to provide contamination information to commanders to assist in the development of their operations plans. NBC reconnaissance units report information to the NBC centers where it is analyzed and disseminated through periodic intelligence reports to US and allied forces.

Units perform NBC reconnaissance within their area. Specialized NBC reconnaissance units perform NBC reconnaissance outside unit areas. Additional NBC information comes from army units operating in the area and from other services and territorial forces. Their observations supplement other NBC reconnaissance efforts and provide the ASCC commander with a more complete picture of the rear area. All units have a responsibility to prevent the spread of contamination to uncontaminated personnel, equipment, supplies, and terrain. See FM 3-3 for additional information.

NBC reconnaissance units tend to operate at the squad level, requiring logistical support from the supported unit. They do not consume large amounts of supplies during their missions; however, because of the specialized nature of their equipment, particularly the M93 NBCRS (FOX), consideration must be given to the unit's maintenance needs.

**Detection and Identification.** US forces use organic detection and identification equipment to identify chemical agents. However, threat forces may employ chemical or biological agents that are unknown to US forces or are beyond the capability of our identification equipment. NBC reconnaissance units or trained medical and intelligence personnel sample suspected biological agents and forward them to supporting medical activities for identification. The fielding of BIDS provides commanders with an effective system to detect and identify biological agents.

**NBC Warning and Reporting System.** The ASCC operates a network of NBC warning and reporting centers that provides information about NBC hazards (see Figure 14-1). They direct the NBC warning and reporting collection effort and evaluate and disseminate NBC information. Commanders at all levels



**Figure 14-1. Chemical Command Relationships**

then use NBC hazard information to execute their missions.

The NBC center at the ASCC headquarters coordinates activities throughout the theater. It acts as the focal point for all NBC battlefield contamination information. This centralized information point is particularly important because unit boundaries change often and known NBC contamination information is passed to the new units.

Chemical teams are assigned to senior logistics headquarters to provide NBC centers for their AORs. These subordinate centers function as the focal point for their area and provide the evaluated NBC information to the theater NBC center. They are under the command of the senior logistics headquarters to which they are assigned. The primary responsibility of the center is to collect, consolidate, evaluate, manage, and disseminate NBC data reported by all COMMZ agencies, to include interface with adjacent friendly forces and HN organizations. The NBC

centers provide the evaluated NBC information to the units in their areas through operations channels. NBC centers coordinate with the appropriate allied nation NBC warning and reporting centers. Similar centers are found in the German territorial army as well as adjacent or collocated armed forces units of other allied nations.

**Limiting Exposure.** The primary purpose of BIDS is to limit the effects of large-area attacks with biological agents that have the potential for catastrophic effects to friendly forces. It will provide a basis for medical personnel to determine effective preventive measures and appropriate treatment if exposure occurs. Detection and identification of biological agents within the AO will limit adverse effects on operations and CSS systems.

### Protection

Protection, the second NBC defensive fundamental, is initially an individual responsibility. Unit leaders must provide

proper instruction in protection skills. Prior to encountering a chemical hazard, units will use MOPP and other available protective means to balance unit effectiveness with personnel safety. After encountering a hazard, units will maintain or restore the level of individual protection through self-aid and exchange of protective clothing and equipment.

Collective protection systems provide NBC protection to groups of personnel and lessen the impact of individual protective measures. Such systems reduce the degradation caused by physical stress and loss of dexterity. Collective protection is applied to C<sup>3</sup> operations, medical operations, critical operational equipment, and rest-and-relief functions. See FM 3-4 for additional information.

### Decontamination

The third NBC defensive fundamental is decontamination, which is performed to prevent casualties, to increase unit and individual effectiveness, and to limit the spread of contamination. Specialized decontamination elements provide operational-level units with decontamination support required beyond that of unit organic capabilities. Decontamination units use large-scale decontamination equipment and procedures to accomplish this support.

Units will perform personnel and operational equipment decontamination. All personnel will perform immediate personal decontamination to decontaminate their skin and equipment. Medical personnel will supervise nonmedical personnel performing patient decontamination in medical treatment facilities (see FM 8-100-4).

A decontamination specialist and decontamination devices assist in operational decontamination, which makes use of two decontamination techniques—MOPP gear exchange and vehicle wash-down. These techniques reduce the hazard to which personnel are exposed. As time and mission permit, specialized chemical elements perform thorough equipment decontamination to reduce the need for individual protection garments. Detailed decontamination operations are combined with other rear area and/or reconstitution operations.

Supported unit commanders establish priorities for decontaminating equipment, materiel stockpiles, facilities, terrain, and MSRs. Decontamination companies decontaminate higher priority materiel, facilities, and MSRs. The natural weathering process or the supported unit with organic resources decontaminates lower priority items. Unit plans for decontamination of large areas must include maximum use of HN equipment and materiel.

Decontamination operations require significant logistical support, such as medical, engineer, MP, maintenance, quartermaster, and transportation. The decontamination element requires engineer support to prepare thorough decontamination sites. MP are used for traffic control and, to a limited extent, security of the site. If a local water source is not available, supporting logistics activities—divisional or nondivisional—push water forward. Additional decontaminants may be required, depending on the type and amount of contamination.

Contaminated units also require extensive logical support. A medical treatment capability supports the decontamination site. Maintenance, quartermaster, and transportation elements are positioned to assist the contaminated units return to fully mission capable.

### NBC SUPPORT STRUCTURE

Each service is staffed and organized to conduct NBC operations and operates independently except when greater economy is realized through cross-service operating agreements either at DOD or theater level. When cross-servicing applies, the Army is tasked to support the other services.

#### Army Service Component Commander

The ASCC, who is responsible for all US Army forces in the theater, provides general guidance for NBC readiness. Normally, the ASCC is responsible for NBC matters and handles them in accordance with the established doctrine. The ASCC headquarters has administrative and logistical responsibility for support of all US Army forces throughout the theater. Inherent in this relationship are

the corresponding responsibilities in the areas of NBC defense and smoke operations.

### **Senior Army NBC Staff**

The senior army NBC staff elements coordinate matters in their AORs with corresponding staff elements in DA and other MACOMs. The staff is integrated into various staff elements of the senior army headquarters: intelligence, operations, and CSS sections. Key personnel, including the senior army chemical officer, recommend policies and priorities to their staffs and provide technical advice to other staff elements.

NBC staff personnel in the operations section monitor the overall situation and make recommendations on NBC matters to commanders and staffs. They recommend the allocation of chemical resources and supervise the senior army warning and reporting center.

### **Chemical Officer**

The chemical officer oversees the management of chemical equipment, analyzes threat NBC capabilities, and disseminates NBC-related intelligence information.

### **Chemical Battle Staff**

The chemical battle staff advises the commander and staff on all matters pertaining to NBC defense and the concept for chemical unit support of operations. In addition, they assist in the planning and coordination for logistical support requirements. Additionally, they—

- Perform continuous NBC IPB for impact on current and future operations.
- Maintain NBC threat information.
- Provide current and anticipated enemy NBC situation information.
- Maintain the status of NBC equipment and chemical defense equipment (CDE).
- Track NBC equipment and CDE consumption rates.

- Forecast NBC equipment and CDE requirements.
- Assist in coordinating HN NBC support.
- Assist in coordinating reconstitution operations when chemical assets are required or involved.

Chemical battle staffs must consider the impact of NBC defense operations on CSS. The decision to initiate MOPP creates a tremendous burden on the CSS system to keep soldiers in serviceable MOPP gear. The chemical battle staff must work closely with the logistician to resolve any chemical defense equipment critical shortfalls.

### **Chemical Units**

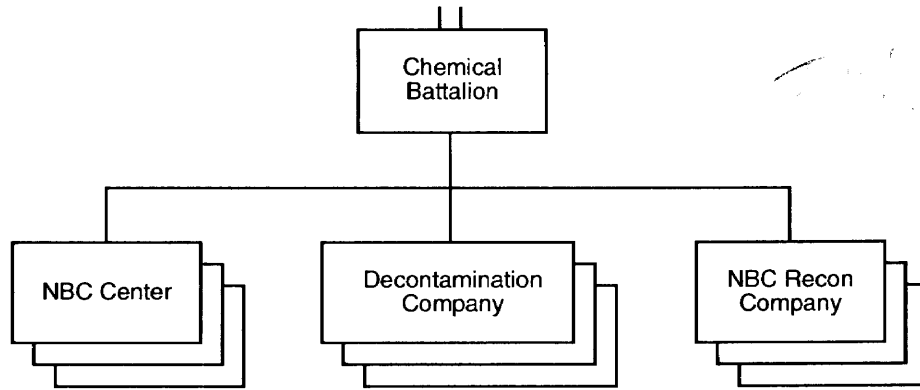
The chemical battalion may exercise C<sup>2</sup> over its three to seven assigned chemical companies, which will normally be a mixture of decontamination or reconnaissance companies. Chemical teams assigned to the senior logistics headquarters provide NBC warning and reporting. Chemical units are assigned to all senior army major subordinate commands that have an AOR. They are assigned or employed as attached, OPCON, DS, GS, or on an area support basis. In the COMMZ, chemical units are assigned to the senior logistics headquarters as major subordinate units. The major chemical headquarters in the senior logistics headquarters is a chemical battalion (enhanced), which provides NBC defense and smoke support to all units in the senior logistics headquarters AOR (see Figure 14-2).

Based on the workload in the battalion AOR, chemical functional companies are assigned to chemical battalions. The workload is determined by analyzing the geographical area and the density of personnel, facilities, and equipment. If no chemical units are assigned, CSS units will request chemical support from the senior logistics headquarters. If assets are available, the senior logistics headquarters will direct the chemical battalion headquarters under its command to fulfill the requirement.

## **SMOKE OPERATIONS**

Smoke is employed at the operational level to defeat enemy reconnaissance, surveillance,

and target acquisition efforts by denying the enemy information and assisting in the defense



**Figure 14-2. Chemical Support Structure**

of operational-level activities. This in turn reduces the availability of information to threat intelligence and hence the effectiveness of threat attacks. Smoke is used primarily to defeat threat RISTA efforts and support deception operations. Smoke operations in rear areas are conducted to-

- Conceal assembly, marshaling, staging, logistical, and other vital areas.
- Conceal the movement of forces and supplies.
- Deceive the enemy.
- Reduce the effectiveness of enemy target acquisition means.
- Restrict nap-of-the-earth and contour approaches for aircraft.
- Disrupt enemy movement, operations, and C<sup>2</sup>.
- Create conditions to surprise or deceive the enemy.

Smoke generator units will be used primarily for smoke operations at the operational level. A complete description of chemical smoke generator units and their capabilities is included in FM 3-50.

The use of smoke can be particularly effective, as it degrades the ability to see deceptive activity, forcing the threat to rely more heavily on speculation or on other means of intelligence gathering. Smoke has one general application at the operational level: screening. Screening smoke is employed on

friendly activities for one of the following reasons:

- The first is to deny threat forces information about friendly activities. This type of smoke screen is significantly larger than the concealed activity to prevent revealing the activity's specific location. It is maintained continuously for long periods to prevent acquisition by frequent threat surveillance.
- The second is to prevent or reduce the effectiveness of threat attacks. Threat visual or electro-optical target acquisition and thermal guidance systems require a definite target signature. Smoke attenuates the effectiveness of these systems.
- The third is to screen a deception force operation, which confuses the enemy concerning friendly activities and complements other deceptive measures.

Chemical battalion smoke companies perform large-area smoke operations. A variable number of companies are assigned to chemical battalions based upon local situations, specific protection priorities, and available resources.

Smoke operations require detailed logistical planning. Planners determine the amount of fog oil and POL necessary for the operation. Operations exceeding two hours or back-to-back smoke missions require logistical support beyond that organic to the chemical unit.

Several techniques are used to provide continuous support. One is forward positioning

of supplies: fog oil, ammunition, and POL. A location for the smoke forward fuel point (SFFP) is determined and transportation assets or the unit itself moves supplies forward. The smoke unit moves to the pre-positioned supplies as necessary. The quantity of fog oil and other supplies stocked at the SFFP is based on the amount needed to support the

mission plus one basic load for the smoke unit. This allows the smoke unit to be fully mission capable after the operation. Another technique is to configure push packages and position them at the nearest CSS activity (forward support battalion, area support group, corps support group). This activity pushes the package forward to a predetermined point.

## CONTINGENCY

The NBC force organization in contingency operations depends greatly on the threat. Prior to deployment, US forces are organized to operate against a sophisticated threat capable of employing NBC munitions. Based upon the actual contingency area to which deployed, the NBC force is tailored to meet the specific situation. In order to reduce the risk to forces, a nominal force organization is deployed to areas with a minimal possibility of the threat using NBC munitions.

The ASCC normally assigns NBC defense responsibilities to a subordinate unit: a COSCOM, a reinforced COSCOM, or other

## OPERATIONS

senior logistics organization. An important point concerning NBC responsibilities is that the area occupied by the corps includes an area equivalent to the COMMZ. The senior chemical officer, his staff, and the functional units assigned to a contingency force perform NBC missions in addition to their own.

The functions of reconnaissance, decontamination, smoke, and the NBC warning and reporting system are common to both the corps and the ASCC. The only change required in a contingency situation is a change in the number of functional chemical units assigned based upon anticipated work loads.

## HOST NATION SUPPORT

The US Army must coordinate its NBC defense and smoke efforts with those of other allied forces operating in the theater. The ASCC should capitalize on HN assets to reduce the impact on the US force structure and provide for an effectively integrated force. HNS is effectively coordinated in all

areas of NBC defense. The HN can support forces for NBC warning, reporting, and decontamination. In cases where smoke and decontamination activities are conducted on HN territory, HN approval is required by HN agreements.